

REMARKS

Claims 1-29 are pending in the application. Claims 1-5, 9-20 and 24-29 are rejected. The Examiner has objected to claims 6-8 and 21-23 but would find them allowable if placed in independent form.

Claim Objections

Claim 19 is objected to because it uses the phrase "like an", which is viewed as rendering the claim ambiguous. Applicant has amended the claim by deleting the phrase. The claim now should be allowable.

Double Patenting

The Examiner repeats his double patenting rejection of claim 1, on the basis of claims in four copending patent applications in combination with other prior art, specifically:

- (1) claims 2, 5 and 7 of published copending Application 2001/0004275;
- (2) claims 1, 2 and 5 of published co pending Application 200/0015314;
- (3) claims 1, 2, 6 and 7 of copending Application No. 2001/0007489; and
- (4) claims 1, 4 and 15 of copending Application No. U.S. 2002/0039155.

The Examiner observes that the features of claim 1 of the present application are disclosed in the cited claims of the various applications. The Examiner notes that none of the cited claims recites the identical combination structure of claim 1.

Applicants will file a Terminal Disclaimer in the several applications and in the present application in order to overcome the rejection, if the Examiner finds that the remaining rejections are overcome. The Examiner is requested to contact the undersigned in such case in order to arrange for submission of the Terminal Disclaimers in each case.

Claim Rejections - 35 U.S.C. § 103

Claims 1-4 and 9-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al (5,341,231) in view of Taira et al (5,712,694). This rejection is traversed.

In Applicants' previous response to the Examiner's rejection, it was asserted (1) that Yamamoto et al has significant deficiencies with respect to the claimed invention, as admitted by the Examiner and (2) that Yamamoto and Taira et al do not teach or suggest a combination that renders the invention unpatentable since one of ordinary skill would not look to Taira et al for guidance as to structural modifications that may be applied to remedy the deficiencies of Yamamoto et al.

Specifically, the Yamamoto et al reference is directed to a liquid crystal display device, as illustrated in Fig. 6, that has five basic components that define its manner of operation, between one or more sources of light 63a, 63b and an observer 70. The light originating at the sources 63a, 63b passes into the edge of the first component, a light guide plate 61, and is directed away from the observer 70 toward the second component, a display element 72. The light then passes through the third component, a polarizer 64b, and is reflected by the fourth component, reflector plate 68. The reflected light passes in sequence through the third, second and first components toward the fifth component, a second polarizer 64a, before reaching the observer 70. Clearly, the light must pass from the light guide plate 61 to the reflector plate surface 68a before being redirected to the polarizer and the observer.

The Examiner again admits that Yamamoto lacks a repetitive prismatic structure, as set forth in claim 1. Applicant respectfully submits that Yamamoto also lacks the combination in claim 1 of a polarizer, an adhesive disposed on one side of the polarizer, and any other structure having optical path changing slopes on the other side of the polarizer. Polarizer 64b has an adhesive 67b on one side and an adhesive 67c on the other side, the adhesive 67c joining to an opaque reflector plate 68 on the other side. Polarizer 64a has no adhesive on any side and the light guide plate 61 on the other side.

Finally, the Examiner admits that Yamamoto also does not disclose the subject matter of the dependent claims, including at least (1) optical path changing slopes, (2) flat surfaces that are inclined at an angle not larger than 5° and not smaller the 35° and having specific projected areas, and (3) an optical path changing slope with ridge lines parallel to or inclined within an angle range of 30° with respect to one side of the polarizer.

Because of the structural arrangement of the invention defined in claim 1, Applicants have considered the possible structures of Yamamoto that could be asserted as the claimed optical path changing polarizer. Applicants also have considered the function of certain of the five components in Yamamoto. In particular, the light guide plate 61 has a function of receiving the light at its edges and directing it away from the observer 70 at surface 61a, past the display element and towards the reflector plate 68. Further, the reflector plate 68 is opaque and directly adjacent adhesive 67c. The reflector receives incident angled light and redirects it in parallel toward the observer.

As previously noted, the path of light does not contemplate reflection along the length of the light guide plate 61, but is focused on the effective direction of light toward the reflector 68. As is clear from Figs. 6 and 8 and the description beginning at col. 10, line 54, the display device relies upon light being reflected from surface 61a or transmitted directly toward the surface 68, but does not rely on reflection from surface 61b, the goal instead being to have the surface transmissive. Thus, Yamamoto et al does not rely upon migrating down the length of the display device. In other words, Yamamoto requires each beam of light originating from the light source 62a, 62b to either travel directly to the reflective surface 68a or to be reflected from the upper surface 61a of the light guide plate 61 and not reflected by the lower surface 61b so that all of the light may be directed outwardly toward the observer 70 (as explained with regard to Figs. 9(1)-(4)). Clearly, Yamamoto does not desire transmission of light linearly through the display element.

The foregoing features clearly demonstrate that one of ordinary skill would not look to Taira et al for a modification of Yamamoto et al. As previously explained, Taira concerns light provided a fluorescent tube emitter. Such light is applied to the side of a light guiding plate 103 and is intended to be transmitted along the length of the plate as non-polarized light 104, as illustrated in Fig. 2. As is clear from the illustrations in Fig. 2, as well as Figs. 14 and 15 cited by the Examiner, light from source 101 is directed into the light guide plate 103, which itself is provided with the repetitive prismatic structure 1201. Adjacent that prismatic structure is a reflector 114. The light guide plate in combination with the reflector ensures that the light does

not pass through the plate, but is redirected to the observer. On the observer side of the light guiding plate 103 is a prism sheet 109 and halfway filter 111. There is no polarizer shown in the illustration.

Clearly, Taira et al does not have any structure to meet the claimed combination of a polarizer, adhesive layer on one side of the polarizer and a repetitive prismatic structure on the other side of the polarizer. The Examiner refers to the mention of a polarizing plate at cols. 5, 7 and 8, where the plate is “placed on the incident side of the liquid crystal panel”. Fig. 36 illustrates the plate 3109 as being adjacent the liquid panel 3106. However, the plate does not have on one side an adhesive and the other side the repetitive prismatic structure, as claimed. Clearly, with reference to the illustration of the invention in Figs. 1A-1I, the purpose of the combination of a polarizer, adhesive layer and repetitive prismatic structure to form an optical path changing polarizer is completely different from the structure in Tiara et al.

Turning next to the Examiner’s suggestion that the structure of Taira may be applied to Fig. 6 of Yamamoto, Applicants respectfully submit that this would involve inserting the light guiding plate 103 of Taira in place of the light guiding plate 61 of Yamamoto. However, no purpose would be served by adding such repetitive prismatic structure into the light guiding plate 61 of Yamamoto since the intention in the Yamamoto light guide plate structure is to have light reflected away from the observer and toward the display element 72. The light guiding plate 103 in Taira et al would do just the opposite. Clearly, the angle of the prismatic structure in Figure 14 of Taira would direct light away from the display element 72 as is apparent from the light path in Fig. 14. By contrast, Yamamoto relies upon light traveling through the display element 72 towards the reflecting surface for direction outwardly to the observer 70. Inserting the structure 103 for the element 61 in Yamamoto would frustrate this purpose. Moreover, the claimed arrangement of polarizer, adhesive and repetitive prismatic structure would not be found.

There is no teaching or suggestion that the light guiding plate of Taira et al could be substituted for any other structure of Yamamoto, including the reflector 68. The light plate receives light from the side and not the top, and would not be an appropriate replacement for the

reflector of Yamamoto. In fact, as is evident from the light path N1202 illustrated in Fig. 14 of Taira et al, the light would be reflected from a top horizontal surface of the light guiding plate 103 rather than transmitted. Such reflection and would be inconsistent with the requirement in Yamamoto to have the light reach the lower reflector 68 for redirection to the observer 70.

The foregoing is not an attack on individual references but a demonstration that there is no motivation or suggestion for a combination of the two references, and that any attempt by the Examiner to suggest such combination would lead to an inoperative structure.

Claims 13-19 and 24-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al (5,341,231) in view of Taira et al (5,712,694). For the reasons given with respect to the rejection of claims 1-4 and 9-12, this rejection is traversed.

Applicants note that the Examiner specifically admits that Yamamoto et al does not teach:

- (1) a repetitive prismatic structure including optical path changing slopes aligned in a substantially constant direction so as to be inclined at an inclination angle of from 35 to 48° with respect to the plane of the polarizer;
- (2) that the optical path changing slopes consist of one kind of slope aligned in a substantially constant direction;
- (3) include two or more kinds of slope in which one kind of slope is aligned in a substantially constant directed served as a reference while another kind of slope aligned in another substantially constant direction are of opposite to said one kind of slopes;
- (4) a tacky layer on the polarizer covered with a strip sheet;
- (5) each of the optical path changing slopes is inclined at an inclination angle in the range of 38 to 45° with respect to the plane of the polarizer not that each of said optical path changing slopes is based on a groove structure substantially shaped like an isosceles triangle or any other triangle section;

- (6) a projected area on a polarizer plane on any flat surface having an inclination angle of not larger than 5° with respect to a polarizer plane is not smaller than ten times as large as a projected area on the polarizer plane of any slope having an inclination angle of not smaller than 35° ; and
- (7) that a discontinuous groove having optical path changing slopes are arranged at random or that ridge lines of the optical path changing slopes are parallel to or inclined with an angle range of $\pm 30^\circ$ with respect to one side of the polarizer.

The Examiner asserts that Taira teaches all of these limitations. However, the flaw in the Examiner's analysis is that Taira would not be substitutable within the structure of Yamamoto. There is no teaching or suggestion in Taira of a polarizer structure, or of a structure that may be substituted a corresponding structure of Yamamoto.

Claims 5 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al (5,341,231) in view of Taira et al (5,712,694) and further in view of Hira et al (5,961,198). This rejection is traversed.

The Examiner admits that the combination of Yamamoto et al and Taira et al does not teach optical path changing slopes that are formed into a structure of grooves or protrusions each substantially shaped like a tetragon or a pentagon in section. The Examiner looks to Hira et al for such structures, particularly in Figs. 20(a), 20(c) and 21(a)-21(c). However, nothing in Hira remedies the deficiencies of the Examiner's position in attempting to combine Taira and Yamamoto. In the absence of any legally sufficient basis for a combination of Yamamoto and Taira et al to render the parent claims obvious, these claims should be allowable.

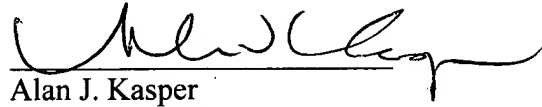
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/756,792

Q62563

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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PATENT TRADEMARK OFFICE

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

19. (Amended) An optical path changing polarizer according to claim 13, wherein each of said optical path changing slopes is based on a groove structure having a shape substantially of [shaped like] an isosceles triangle or any other triangle in section